

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A taking lens apparatus comprising:
a zoom lens system that is composed of a plurality of lens units and that achieves zooming by varying distances between the lens units; and
an image sensor that converts an optical image formed by the zoom lens system into an electrical signal;

wherein the zoom lens system comprises:

a first lens unit that is disposed at an object-side end of the zoom lens system, that has a negative optical power as a whole, and that remains stationary relative to the image sensor during zooming of the zoom lens ~~system;~~system, the first lens unit including a cemented lens element, the cemented lens element including a negative lens element and a positive lens element;

a second lens unit that is disposed on an image-sensor side of the first lens unit with a variable aerial distance secured in between, that has a positive optical power as a whole, and that moves toward an object side during zooming of the zoom lens system from a wide-angle end to a telephoto end; and

a third lens unit that is disposed on an image-sensor side of the second lens unit with a variable aerial distance secured in between, that has a positive optical power as a whole, and that moves toward an image side during initial zooming from the wide-angle end to the telephoto end.

2. (Original) A taking lens apparatus as claimed in claim 1, wherein the third lens unit moves toward an image side during zooming of the zoom lens system from the wide-angle end to the telephoto end.

3. (Original) A taking lens apparatus as claimed in claim 1, wherein the third lens unit moves along a U-shaped trajectory convex to an image side during zooming of the zoom lens system from the wide-angle end to the telephoto end.

4. (Original) A taking lens apparatus as claimed in claim 1, wherein the first lens unit includes an aspherical surface.

5. (Original) A taking lens apparatus as claimed in claim 1, wherein an aperture stop is disposed between the first and second lens units.

6. (Original) A taking lens apparatus as claimed in claim 1, wherein an aperture stop is disposed between the second and third lens units.

7. (Original) A taking lens apparatus as claimed in claim 1, wherein the zoom lens system includes an aperture stop that moves together with the second lens unit during zooming.

8. (Original) A taking lens apparatus as claimed in claim 1, wherein the zoom lens system includes an aperture stop that remains stationary relative to an image plane during zooming.

9. (Original) A taking lens apparatus as claimed in claim 1, wherein the third lens unit is composed of a plurality of lens elements.

10. (Currently Amended) A taking lens apparatus as claimed in claim 1, wherein the following condition is fulfilled:

$$2.5 < D_{ref} / Y_{max} < 4$$

where

D_{ref} represents ~~a sum of an axial distances between and~~ distance between a most
object-side optical component ~~located immediately in front of the~~
~~reflective member and an image side of the first lens unit and a next most~~

object-side optical component located immediately behind the reflective member; of the first lens unit; and

Y_{\max} represents a maximum image height.

11. (Original) A taking lens apparatus as claimed in claim 1, wherein the following condition is fulfilled:

$$1.0 < (f_t \cdot m_{2w}) / (f_w \cdot m_{2t})$$

where

f_w represents a focal length of the zoom lens system as a whole at the wide-angle end;

f_t represents a focal length of the zoom lens system as a whole at the telephoto end;

m_{2w} represents an imaging magnification of the second lens unit at the wide-angle end; and

m_{2t} represents an imaging magnification of the second lens unit at the telephoto end.

12. (Original) A taking lens apparatus as claimed in claim 1, wherein focusing is achieved by moving the third lens unit.

13. (Currently Amended) A taking lens apparatus as claimed in claim 1, wherein only the most object-side optical component of the first lens unit is comprised of one lens element disposed on an object side of the reflective member element.

14. (Currently Amended) A taking lens apparatus comprising:
a zoom lens system that is composed of a plurality of lens units and that achieves zooming by varying distances between the lens units; and
an image sensor that converts an optical image formed by the zoom lens system into an electrical signal;

wherein the zoom lens system comprises:

a first lens unit that is disposed at an object-side end of the zoom lens

system, that has a negative optical power as a whole, that includes a reflective member for bending an optical axis of the zoom lens system as a whole at substantially 90°, and that remains stationary relative to the image sensor during zooming of the zoom lens system;

a second lens unit that is disposed on an image-sensor side of the first lens unit with a variable aerial distance secured in between, that has a positive optical power as a whole, and that moves toward an object side during zooming of the zoom lens system from a wide-angle end to a telephoto end; and

a third lens unit that is disposed on an image-sensor side of the second lens unit with a variable aerial distance secured in between, that has a positive optical power as a whole, and that moves toward an image side during initial zooming from the wide-angle end to the telephoto end; telephoto end, the third lens unit including a plurality of lens elements.

15. (Original) A taking lens apparatus as claimed in claim 14, wherein the third lens unit moves toward an image side during zooming of the zoom lens system from the wide-angle end to the telephoto end.

16. (Original) A taking lens apparatus as claimed in claim 14, wherein the third lens unit moves along a U-shaped trajectory convex to an image side during zooming of the zoom lens system from the wide-angle end to the telephoto end.

17. (Original) A taking lens apparatus as claimed in claim 14, wherein the first lens unit includes an aspherical surface.

18. (Original) A taking lens apparatus as claimed in claim 14, wherein an aperture stop is disposed between the first and second lens units.

19. (Original) A taking lens apparatus as claimed in claim 14, wherein an aperture stop is disposed between the second and third lens units.

20. (Original) A taking lens apparatus as claimed in claim 14, wherein the zoom lens system includes an aperture stop that moves together with the second lens unit during zooming.

21. (Original) A taking lens apparatus as claimed in claim 14, wherein the zoom lens system includes an aperture stop that remains stationary relative to an image plane during zooming.

22. (Canceled)

23. (Original) A taking lens apparatus as claimed in claim 14, wherein the following condition is fulfilled:

$$2.5 < D_{ref} / Y_{max} < 4$$

where

D_{ref} represents a sum of axial distances between an object-side optical component located immediately in front of the reflective member and an image-side optical component located immediately behind the reflective member; and

Y_{max} represents a maximum image height.

24. (Currently Amended) A taking lens apparatus as claimed in claim 14, wherein the following condition is fulfilled:

$$1.0 < (f_t \cdot m_{2w}) / (f_w \cdot m_{2t})$$

where

f_w represents a focal length of the zoom lens system as a whole at the wide-angle end;

f_t represents a focal length of the zoom lens system as a whole at the telephoto end;

m_{2w} represents an imaging magnification ~~[[of]]~~with the second lens unit at the wide-angle end; and

m2t represents an imaging magnification ~~[[of]]~~with the second lens unit at the telephoto end.

25. (Original) A taking lens apparatus as claimed in claim 14, wherein focusing is achieved by moving the third lens unit.

26. (Original) A taking lens apparatus as claimed in claim 14, wherein only one lens element is disposed on an object side of the reflective member.

27. (Currently Amended) A camera comprising:
a taking lens apparatus including a zoom lens system that is composed of a plurality of lens units and that achieves zooming by varying distances between the lens units and an image sensor that converts an optical image formed by the zoom lens system into an electrical signal;

wherein the zoom lens system comprises:

a first lens unit that is disposed at an object-side end of the zoom lens system, that has a negative optical power as a whole, and that remains stationary relative to the image sensor during zooming of the zoom lens ~~system;~~system, the first lens unit including a cemented lens element, the cemented lens element including a negative lens element and a positive lens element;

a second lens unit that is disposed on an image-sensor side of the first lens unit with a variable aerial distance secured in between, that has a positive optical power as a whole, and that moves toward an object side during zooming of the zoom lens system from a wide-angle end to a telephoto end; and

a third lens unit that is disposed on an image-sensor side of the second lens unit with a variable aerial distance secured in between, that has a positive optical power as a whole, and that moves toward an image side during initial zooming from the wide-angle end to the ~~telephoto~~telephoto end.

28. (Original) A camera as claimed in claim 27, wherein the third lens unit moves toward an image side during zooming of the zoom lens system from the wide-angle end to the telephoto end.

29. (Original) A camera as claimed in claim 27, wherein the third lens unit moves along a U-shaped trajectory convex to an image side during zooming of the zoom lens system from the wide-angle end to the telephoto end.

30. (Original) A camera as claimed in claim 27, wherein the first lens unit includes an aspherical surface.

31. (Original) A camera as claimed in claim 27, wherein an aperture stop is disposed between the first and second lens units.

32. (Original) A camera as claimed in claim 27, wherein an aperture stop is disposed between the second and third lens units.

33. (Original) A camera as claimed in claim 27, wherein the zoom lens system includes an aperture stop that moves together with the second lens unit during zooming.

34. (Original) A camera as claimed in claim 27, wherein the zoom lens system includes an aperture stop that remains stationary relative to an image plane during zooming.

35. (Original) A camera as claimed in claim 27, wherein the third lens unit is composed of a plurality of lens elements.

36. (Currently Amended) A camera as claimed in claim 27, wherein the following condition is fulfilled:

$$2.5 < D_{ref} / Y_{max} < 4$$

where

D_{ref} represents ~~a sum of an~~ distance between a most
object-side optical component ~~located immediately in front of the~~
~~reflective member and an image side of the first lens unit and a next most~~
object-side optical component located immediately behind the reflective
member of the first lens unit; and

Y_{max} represents a maximum image height.

37. (Original) A camera as claimed in claim 27, wherein the following condition is fulfilled:

$$1.0 < (f_t \cdot m_{2w}) / (f_w \cdot m_{2t})$$

where

f_w represents a focal length of the zoom lens system as a whole at the wide-angle end;

f_t represents a focal length of the zoom lens system as a whole at the telephoto end;

m_{2w} represents an imaging magnification of the second lens unit at the wide-angle end; and

m_{2t} represents an imaging magnification of the second lens unit at the telephoto end.

38. (Original) A camera as claimed in claim 27, wherein focusing is achieved by moving the third lens unit.

39. (Currently Amended) A camera as claimed in claim 27, wherein only the most object-side optical component of the first lens unit is comprised of one lens element
is disposed on an object side of the reflective member.

40. (Currently Amended) A camera comprising:

a taking lens apparatus including a zoom lens system that is composed of a

plurality of lens units and that achieves zooming by varying distances between the lens units and an image sensor that converts an optical image formed by the zoom lens system into an electrical signal;

wherein the zoom lens system comprises:

a first lens unit that is disposed at an object-side end of the zoom lens system, that has a negative optical power as a whole, that includes a reflective member for bending an optical axis of the zoom lens system as a whole at substantially 90°, and that remains stationary relative to the image sensor during zooming of the zoom lens system;

a second lens unit that is disposed on an image-sensor side of the first lens unit with a variable aerial distance secured in between, that has a positive optical power as a whole, and that moves toward an object side during zooming of the zoom lens system from a wide-angle end to a telephoto end; and

a third lens unit that is disposed on an image-sensor side of the second lens unit with a variable aerial distance secured in between, that has a positive optical power as a whole, and that moves toward an image side during initial zooming from the wide-angle end to the telephoto end. ~~telephoto end.~~ telephoto end, the third lens unit including a plurality of lens elements.

41. (Original) A camera as claimed in claim 40, wherein the third lens unit moves toward an image side during zooming of the zoom lens system from the wide-angle end to the telephoto end.

42. (Original) A camera as claimed in claim 40, wherein the third lens unit moves along a U-shaped trajectory convex to an image side during zooming of the zoom lens system from the wide-angle end to the telephoto end.

43. (Original) A camera as claimed in claim 40, wherein the first lens unit includes an aspherical surface.

44. (Original) A camera as claimed in claim 40, wherein an aperture stop is disposed between the first and second lens units.

45. (Original) A camera as claimed in claim 40, wherein an aperture stop is disposed between the second and third lens units.

46. (Original) A camera as claimed in claim 40, wherein the zoom lens system includes an aperture stop that moves together with the second lens unit during zooming.

47. (Original) A camera as claimed in claim 40, wherein the zoom lens system includes an aperture stop that remains stationary relative to an image plane during zooming.

48. (Canceled)

49. (Original) A camera as claimed in claim 40, wherein the following condition is fulfilled:

$$2.5 < D_{ref} / Y_{max} < 4$$

where

D_{ref} represents a sum of axial distances between an object-side optical component located immediately in front of the reflective member and an image-side optical component located immediately behind the reflective member; and

Y_{max} represents a maximum image height.

50. (Currently Amended) A camera as claimed in claim 40, wherein the following condition is fulfilled:

$$1.0 < (f_t \cdot m_{2w}) / (f_w \cdot m_{2t})$$

where

fw represents a focal length of the zoom lens system as a whole at the wide-angle end;

ft represents a focal length of the zoom lens system as a whole at the telephoto end;

m2w represents an imaging magnification ~~[[of]]~~with the second lens unit at the wide-angle end; and

m2t represents an imaging magnification ~~[[of]]~~with the second lens unit at the telephoto end.

51. (Original) A camera as claimed in claim 40, wherein focusing is achieved by moving the third lens unit.

52. (Original) A camera as claimed in claim 40, wherein only one lens element is disposed on an object side of the reflective member.

53. (New) A taking lens apparatus comprising:
a zoom lens system that includes:

a first lens unit disposed at an object-side end of the zoom lens system, the first lens unit having a negative optical power as a whole, the first lens unit including an object-most side first lens element with an aspherical surface, and the first lens unit including a reflective member for bending an optical axis of the zoom lens system as a whole at substantially 90°; and

a second lens unit, the zoom lens system adapted to achieve zooming by varying a distance between the first lens unit and the second lens unit; and

an image sensor adapted to convert an optical image formed by the zoom lens system into an electrical signal, the image sensor remaining stationary relative to the first lens unit during zooming of the zoom lens system,

wherein the following condition is fulfilled:

$$0 < X_a - X_b$$

where

- Xa represents a displacement along the optical axis from a paraxial curvature within a maximum effective range on an object-side surface of the first lens element with a displacement toward the image side being positive; and
- Xb represents a displacement along the optical axis from the paraxial curvature within the maximum effective range on an image-side surface of the first lens element with the displacement toward the image side being positive.

54. (New) A taking lens apparatus as claimed in claim 53, wherein the zoom lens system further includes an aperture stop, the aperture stop being disposed between the first and second lens units.

55. (New) A taking lens apparatus as claimed in claim 53, wherein the zoom lens system further includes an aperture stop, the aperture stop being disposed on an image-side of the second lens unit.

56. (New) A taking lens apparatus as claimed in claim 53, wherein the zoom lens system further includes an aperture stop, the aperture stop being adapted to move with the second lens unit during zooming.

57. (New) A taking lens apparatus as claimed in claim 53, wherein the zoom lens system further includes an aperture stop, the aperture stop being stationary relative to an image plane during zooming.

58. (New) A taking lens apparatus as claimed in claim 53, wherein the following condition is fulfilled:

$$2.5 < D_{ref} / Y_{max} < 4$$

where

Dref represents an axial distance between the first lens element and an image-side optical component located immediately behind the reflective member;
and
Ymax represents a maximum image height.

59. (New) A taking lens apparatus as claimed in claim 53, wherein the following condition is fulfilled:

$$1.0 < (f_t \cdot m_{2w}) / (f_w \cdot m_{2t})$$

where

f_w represents a focal length of the zoom lens system as a whole at the wide-angle end;
f_t represents a focal length of the zoom lens system as a whole at the telephoto end;
m_{2w} represents an imaging magnification with the second lens unit at the wide-angle end; and
m_{2t} represents an imaging magnification with the second lens unit at the telephoto end.

60. (New) A taking lens apparatus as claimed in claim 53, wherein only the first lens element is disposed on an object side of the reflective member.